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Food Spoilage Detection System Using Arduino Uno

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Abstract: *This project focuses on designing an Arduino Uno-based air quality and methane detection system aimed at monitoring environmental conditions to prevent food spoilage and detect hazardous gas leaks. The system integrates multiple sensors, including the DHT11 for temperature and humidity monitoring, MQ135 for air quality assessment, and MQ04 for methane detection, providing real-time data on environmental parameters that contribute to food degradation and potential safety hazards. The collected data is displayed on an I2C LCD, offering a user-friendly interface to visualize temperature, humidity, air quality, and methane levels. To ensure timely alerts, the system incorporates a buzzer that activates when predefined thresholds are exceeded, indicating spoilage conditions (such as high humidity and temperature) or dangerous methane concentrations, thereby enabling prompt corrective actions. Power is supplied via two Li-ion cells, ensuring portability and efficient energy usage. By combining sensor data with an intuitive alert mechanism, this project provides a cost-effective and reliable solution for both household and industrial applications, enhancing food safety and mitigating risks associated with methane exposure. The system's modular design allows for future expansions, such as IoT integration for remote monitoring, making it a versatile tool for environmental and safety monitoring.*

Keywords: MQ-4sensor,DHT11sensor,BuckConverter, MQ135

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